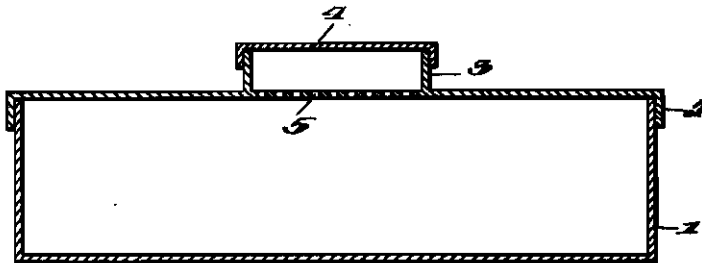


PUBLISHED
MAY 4, 1943.
BY A. P. C.

W. PETRELLI
METHOD AND APPARATUS TO FREEZE FRUIT,
VEGETABLES, AND SUCH LIKE
Filed Jan. 8, 1941

Serial No.
373,692



Inventor
WILHELM PETRELLI,

By

Bailey & Pearson

Attorney

ALIEN PROPERTY CUSTODIAN

METHOD AND APPARATUS TO FREEZE FRUIT, VEGETABLES, AND SUCH LIKE

Wilhelm Petrelli, Dusseldorf, Germany; vested in
the Allen Property Custodian

Application filed January 8, 1941

It has previously been proposed to carry out rapid freezing of fruit, vegetables and such like in closed containers, in order to withhold the influence of atmospherical-oxygen. This method nevertheless still shows disadvantages in that, the oxygen in the relatively small amount of air contained within the closed container is sufficient to create unfavourable transformation of the goods during the time preceding freezing. In the first instance the goods after being prepared for freezing must be introduced into the container, whereby a certain period of time elapses. Then these containers are set in the cooling apparatus, which again requires a certain period of time until the cooling effect penetrates the inner of the container so far that the goods begin to freeze. This time is sufficient to cause deterioration of the goods which are particularly sensitive due to previous handling. Thus damage is suffered which influences the durability and appearance of the goods, and which shows itself when thawing at a later date.

In order to eliminate the disadvantages of the known method, it is proposed according to this invention, to expose the fruit, vegetables and such like to an atmosphere devoid of, or of a minimum oxygen content, immediately upon preparation for the freezing process, as for example after cleaning and introduction into the cooling apparatus, or containers respectively, which are set into the cooling apparatus, and in which the goods remain during the freezing process. The protective atmosphere as is known per se, can be of nitrogen, carbonic acid or similar. Its relative content of carbonic acid or similar is so adjusted that no deterioration of the goods can set in.

In so far as the protective atmosphere consists of carbonic acid, a further favourable effect, besides the displacement of oxygen from the goods to be frozen and the improved durability connected therewith, is that a vivification of the impaired condition of the goods due to previous treatment takes place. As is well known plants exhale oxygen and inhale carbonic acid, and introduction of carbonic acid to the plants supports the evolution of same, so that in a carbonic acid atmosphere they take on a particularly fresh appearance. With fruit or similar it is exactly the same, since after they have been gathered evolution continues, though much slower. If the fruit prepared for the freezing process is now brought into a carbonic acid atmosphere, as proposed by this invention, it regains its original fresh and well-rounded appearance. Due to the fact that the fruit is not only preliminarily treated with carbonic acid, but is subjected to the low temperatures necessary for rapid freezing in it, it is possible to maintain the utmost state of freshness attained through the preliminary treat-

ment with carbonic acid after freezing, therefore by means of this invention a far superior product is achieved than with the usual freezing procedures.

The improvement of the product obtained is particularly noticeable with raspberries, which owing to the treatment preceding freezing become very uncomely and pulpy, and which up to now have been frozen in this disadvantageous state. On the contrary it is now possible when applying the method in accordance with the invention to freeze them in a perfectly fresh condition, so that after the process has been effected a pulpy mass does not result, but each berry is separate and looks like a sugar-sweet.

The inventive idea is very easily executed if the goods are frozen in closed vessels in which a small amount of carbonic-acid ice is placed, and so proportioned that by evaporation the desired amount of carbonic acid necessary for the protective atmosphere results. The amount of carbonic acid must be so proportioned, that on the one hand a displacing of the oxygen is accomplished, whilst on the other hand it must not be of such quantity that an acidification of the goods sets in. Instead of placing the carbonic-acid ice immediately in the vessels it can in accordance with a further characteristic of the invention, be placed in a correspondingly formed lid on the vessel, and which is in connection with the interior of the vessel through a sieve or similar, so that the resulting carbonic acid only flows into the vessel.

It is of course known that fruit and vegetables can be kept fresh in gasified chambers, but it has not been found necessary to apply such a measure in preparation for freezing. It is the merit of the inventor to have firstly recognized, that the treatment of goods to be frozen, which forms the object of this invention, permits a definitely improved quality of the article to be attained.

In the accompanying drawing an example of construction of a device for the execution of the method according to invention is shown.

The actual container 1, serves to receive the fruit or vegetables and can be closed by lid 2. On the upperside of this a container 3 is formed, closed by lid 4, and connected with the interior of container 1 through sieve 5.

In container 3 the requisite amount of carbonic-acid ice to produce the protective atmosphere is placed, sealed by lid 4. Under influence of the external temperature the carbonic-acid ice develops carbonic acid which flows into container 1 through sieve 5 forming the desired protective atmosphere. In this condition the container can stand for a certain time without any depreciation of the goods setting in.

WILHELM PETRELLI.